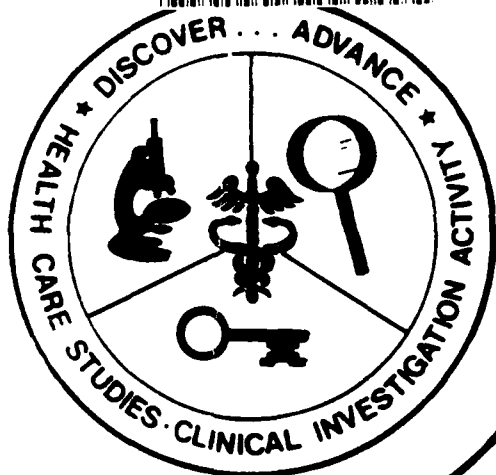


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**DEVELOPMENT OF A POST ANESTHESIA
CARE UNIT NURSING PATIENT CLASSIFICATION
SYSTEM: THE INDIRECT CARE COMPONENT**

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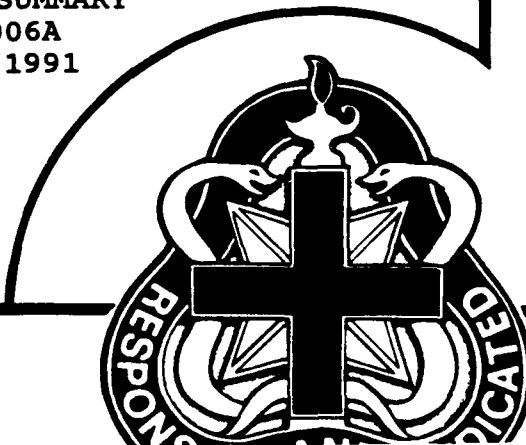
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<p>The purpose of this study was to determine the Indirect Care time (including Nonproductive time) expressed as a proportion of Available time; this eventually will be combined with Direct Care time and Unavailable for Care time to determine nursing requirements consistent with currently accepted nurse staffing standards methodology. To determine the Indirect Care and Nonproductive proportions for the Army Post Anesthesia Care Unit (PACU) nursing units, a stratified work sampling design was used. Using weighted stratified sampling, the required sample size of nine sites was selected from the low, medium, and high workload strata proportionate to the number of sites from the total universe that occurred within each stratum. Using 5% accuracy (95% confidence interval length) and .65 as an approximation of the Indirect Care time proportion, it was estimated that at least 364 data point per site were required. Actual sample resulted in an accuracy of at least 4.3%. Data collection was distributed over a work cycle for PACU, defined as one week of the measured unit's hours of operation. A minimum of one observation session per hour and a maximum of</p>					
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six observation sessions per hour were scheduled to insure representative sampling of nursing activities throughout the day. Upon analysis of the collected data, it was found that each of the workload stratum-specific proportions was within 3% of the overall combined Indirect Care and Nonproductive time proportions of 76.8%. Using the criteria of accuracy and ease of use, the findings from this study recommend that a combined Indirect Care and Nonproductive proportion of 76.8% (based on Available time and with the head nurse, wardmaster, and ward clerk positions considered as directed requirements) be used to develop the PACU staffing standard.

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- o Madigan Army Medical Center's Department of Nursing for support during the final completion of this report.

**DEVELOPMENT OF A POST ANESTHESIA CARE UNIT NURSING
PATIENT CLASSIFICATION SYSTEM:
THE INDIRECT CARE COMPONENT
EXECUTIVE SUMMARY**

Background

Within the tri-service health care arena, staffing methodology has evolved from subjective analysis by manpower experts (e.g., manpower teams) to more objective staffing standards that quantitatively express manpower requirements as a function of variable workload. Post Anesthesia Care Unit (PACU) staffing presently does not have a patient acuity-based nurse staffing standard.

Purpose

The purpose of this study was to determine the Indirect Care time (including Nonproductive time) expressed as a proportion of Available time; this eventually will be combined with Direct Care time and Unavailable for Care time to determine nursing requirements consistent with currently accepted nurse staffing standards methodology. The original Army indirect nursing care study was done by Misener, Frelin, and Twist in 1983. With knowledge of Misener et al.'s definitions and in light of the impact of subsequent manpower regulatory changes, the present study defined terms to insure consistency with Misener et al.'s definitions wherever feasible.

Research Questions

Two specific research questions were answered in this study. They are as follows:

- 1) What are the Indirect Care and Nonproductive proportions of Available time for PACU units?

2) Do these Indirect Care and Nonproductive proportions of Available time differ by workload strata?

Study Design

To determine the Indirect Care and Nonproductive proportions for the Army PACU nursing units, a stratified work sampling design was used. Only PACU units having their own dedicated staffing and which were CONUS locations were considered as potential data collection sites. Using weighted stratified sampling, the required sample size of nine sites was selected from the low, medium, and high workload strata proportionate to the number of sites from the total universe that occurred within each stratum.

The required number of observations to be made at each selected site in the sample was determined by both the desired level of accuracy of the measured proportions and the proportion of occurrence for the largest category of time to be observed. Using 5% accuracy (95% confidence interval length) and .65 as an approximation of the Indirect Care time proportion, the largest proportion to be estimated, it was estimated that at least 364 data points per site were required. To insure that 364 usable data points were obtained, work sampling activities were scheduled to collect 600 observations at each site. Data collection was distributed over a work cycle for PACU, defined as one week of the measured unit's hours of operation. Prior to data collection, the number of observation sessions as well as random start times were established for each site. A minimum of

one observation session per hour (to allow sampling during all the hours of operation) and a maximum of six observation sessions per hour (to preclude continuous observation) were scheduled to insure representative sampling of nursing activities throughout the day. Times were predetermined prior to data collection with a new set of times systematically selected for each day of the work cycle, and a data collection form was generated for each hour of the collection period.

To establish the validity of the Work Sampling Data Collection Form used in this study, the instrument was reviewed by three nurse researchers. This form was further reviewed by nurses from each of the services and from the Office of the Assistant Secretary Defense, Health Affairs [OASD(HA)] to insure completeness of the form and compatibility with service-specific requirements. The instrument was then successfully pilot tested at the first data collection site.

Data collectors were trained in a three-day program that included presentation of didactic information, execution of practical exercises, actual data collection, and use of a videotape of observation sessions for testing. A criterion of 90% accuracy on that test was required to be a data collector.

Results

In the following discussion, Total time refers to all observations, Available time refers to Total time minus the Unavailable for Care time. Available time is further divided into Direct Care time, Indirect Care time, and Nonproductive

time. Detailed analysis of Available time stratified by site workload showed that as workload increases the proportion of head nurse observations decrease whereas the proportion of RN observations increase. Also, compared to the low workload stratum, the proportion of LPN observations decreases in the medium workload stratum and increases in the high workload stratum. In contrast, the proportion of nursing assistant observations increases in the medium workload stratum and decreases in high workload stratum. Finally, ward clerks were found only at sites with high workload. Times were computed for various nursing staff mixes, including a) all staff, b) excluding head nurse and wardmaster, and c) excluding head nurse, wardmaster, and ward clerk.

Conclusions

Indirect Care and Nonproductive times accounted for 75% to 80%, depending on the nursing staff mix, with Indirect Care alone accounting for 51% to 55%. Each of the workload stratum-specific proportions was within 3% of the overall combined Indirect Care and Nonproductive time proportion of 76.8%. Using the criteria of accuracy and ease of use, the following approaches are suggested by which to derive the proportion desired from this study. First, Available time rather than Total time should be used as the basis of deriving the Indirect Care proportion because this facilitates creation of a staffing standard using the Manpower Availability Factor. Second, the contribution of the head nurse, wardmaster, and ward clerk should be eliminated

from Available time. Third, both the Indirect Care proportion and the Nonproductive proportion should be combined to give a single "nondirect" care proportion.

Recommendations

1. Using Available time and eliminating three positions (head nurse, wardmaster, and ward clerk), the combined Indirect Care and Nonproductive proportion of 76.8% should be used to develop the PACU staffing standard. This recommendation assumes that sufficient workload is present to require staffing at a higher level than that associated with directed requirements (head nurse, wardmaster or ward clerk).

2. The impact of non-nursing activities on nurse staffing requirements should be further evaluated.

3. Because all required elements are now known, a PACU staffing standard should be immediately developed. Part of this development process should consider basing staffing upon other than mean acuity times. Analysis should be conducted to determine at which acuity level risk management is minimized while productivity is maximized. This analysis is especially critical in units like PACU in which it is very difficult to move staff from other areas to assist with peaks in workload.

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Misener, T., Frelin, A. J. & Twist, P. (1983). Time Spent in Indirect Nursing Care. Report 83-004. Ft. Sam Houston, TX: U. S. Army Health Services Command.

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